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A. INTRODUCTION

The peripheral retaining wall under construction located at the premises of JP park, Mathikere, Bangalore is an RC structure supporting earth load for almost full height of wall on road side portion of the park. The total length of the retaining wall is about 300m length. At present construction of retaining wall is almost completed except for few final lifts.

Now concerned authorities of BBMP intend to assess the structural stability of retaining wall through verification of designs and to recommend appropriate measures to improve the durability of the structure. In view of this, a reference was made to M/s. Civil Aid Technoclinic Pvt. Ltd., Bangalore, to carry out detailed theoretical verification to ascertain the stability of retaining wall and to recommend appropriate measures, if required.

In response to this, a detailed evaluation was carried out by us through the structural analysis of the retaining wall taking into account the existing sections and proposed loads. This report, in brief, summarizes the outcome of the evaluation study and conclusion thereon.

B. PHYSICAL OBSERVATIONS

Following are the physical observations made consequent to the detailed inspection of the retaining wall under construction:

- No visible distress features were observed in constructed portion of retaining wall.
- Quality of construction of retaining wall was observed to be by and large satisfactory
- Absence of weep holes and expansion joints were observed all along the retaining wall
- Minor surface honey combs were observed near construction joints at a few isolated locations.

Asst. Executive Engineer
Yeshwanthpur Division
Bruhat Bangalore Mahanagara Palike

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C THEORETICAL ANALYSIS TO VERIFY THE STRUCTURAL ADEQUACY OF EXISTING RETAINING WALL FOR THE PROPOSED LEVEL OF LOADING

A detailed theoretical structural analysis was carried out for the existing RC retaining wall considering following loadings, parameters and furnished design and structural details by structural consultant

Total depth above the finished drain bed:	4.0m
Total depth below the finished drain bed:	1.5m
Depth above the ground level:	0.6m
Thickness of wall at bottom:	0.55m
Thickness of wall at top:	0.3m

Grade of concrete	:	25MPa
Grade of steel	:	Fe 415
Soil Density	:	20 kN/m^3 (saturated condition)
Surcharge Load	:	10 kN/m
SBC of Soil	:	150 kN/m^2 (assumed)
Active earth pressure	:	0.33

The adequacy of existing members were checked as per the guide lines in IS:456-2000 for RC members.

Discussions on theoretical analysis and design check:

From the results of the theoretical analysis and design check, it is inferred that the existing section and reinforcement provided for cantilever type RC retaining wall is found to be structurally **adequate** to support the proposed level of loads considered in the analysis. However, the safe bearing capacity of soil shall be confirmed through soil test.

Asst. Executive Engineer
Yeshwanthpur Sub-Division
Bruhat Bangalore Mahanagara Palike

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D. CONCLUDING REMARKS

From the outcome of the study and theoretical verification, it is concluded that, the cantilever retaining wall structure under construction located at the premises of JP Park Mathikere, Bangalore is **structurally adequate** to support the proposed level of loads considered in the analysis for stability, lateral pressure and surcharge loads. The structural designs and drawings furnished are by and large in conformity with the standards and requirement to suit the site condition.

Eventhough, the retaining wall structure is structurally adequate against saturated condition, **considering serviceability criteria** of retaining wall, it is preferable to provide adequate weep holes in the existing retaining wall to drain out rain water to counteract water pressure. Further, to avoid thermal movement cracks in retaining wall it is preferable to provide vertical expansion joints as per the clause no.27 of IS 456-2000. Also, adequate rain water drainage system shall be created around the earth side to avoid stagnation of water during rains.

R. MOHANKUMAR
Senior Manager

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Asst. Executive Engineer
Yeshwanthpura Sub-Division
Bruhat Bangalore Mahanagara Palike

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